

# Perceived Behavioral Control and its Impact on Entrepreneurial Inclination of Engineering Graduates in Karachi: An Interpretative Study

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## Abstract

*The theory of planned behaviour has three components namely: attitude, subjective norms and perceived behavioural control (PBC). Earlier, research studies suggested that a positive attitude is necessary to predict entrepreneurial behaviour; however, a number of studies now have concluded that perceived behavioural control has significant relationship with entrepreneurial intentions. Actual behavioural control such as family cooperation, availability of finances, necessary business skills and time is a non-motivational predictor of entrepreneurial behaviour and it is a good predictor of intentions to start one's own business; perceived behavioural control, on the other hand, is found to have a positive and significant relationship with entrepreneurial inclination of the individuals. This is a quantitative study and explores students' perception about their capability and inclination to start their own business. The study focuses on Bachelors of Engineering final year students. A total of four universities were selected from the ranking list of Higher education Commission Pakistan. Random sampling technique using web-based sample size calculator is used to select the sample of the students. The research instrument was based on the findings of the earlier research studies and Ajzen (2002) guidelines were used on developing a questionnaire to measure perceived behavioral control. Correlation analysis is applied to assess the relationship between perceived behavioural control and entrepreneurial inclination. The research study discovers that engineers have high inclinations towards entrepreneurship even though quantitative analysis shows that PBC and entrepreneurial inclination are linked remotely and insignificantly. The regression analysis reveals that the model fit is only 10% between entrepreneurial inclination and PBC. Thus, there are other factors that seek to define entrepreneurial inclination of the engineering graduates and PBC does not play a significant role.*

**Keywords:** Behavioural control, entrepreneurship, entrepreneur intention, non-business students

## 1. Introduction

A career choice for a fresh graduate is an important decision. Their decision making to a great extent depends upon how they view their own capabilities, i.e. their self-concept. In a more technical way, we can say that their career choice depends upon their perception of their capabilities (Kolvereid, 1992). Ajzen (1985) termed it as perceived behavioral control (PBC) in his theory of planned behavior. Perceived behavioral control or PBC is the perception of level of easiness in starting one's own business. Karlsson and Moberg (2013) termed PBC as Entrepreneurial self-efficacy (ESE). They defined ESE as an individual's perceived competence in starting a business. These perceptions may be accurate or not, they help people assess themselves. As Ayodele (2013) stresses that individual strength of putting thoughts

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into action lies in their perception of themselves. The current study talks about engineering graduates' career choice, specifically their choice to start their own business.

The theory of planned behavior given by Ajzen in 1985 suggests that entrepreneurial intention or inclination is the result of motivational level of the individuals. The theory has three components namely, attitude, subjective norms and perceived behavioral control. The theory has been well researched and has been used to study entrepreneurial intentions in different scenarios. The theory helps in understanding the causal factors of human behavior (Koe et al, 2012) and provides the link between cognitive stage (probable intention to become an entrepreneur) and behavioral stage (actual business venture setup) of entrepreneurship (Verheul, 2013). Earlier, research studies suggested that a positive attitude is necessary to predict entrepreneurial behavior; however, a number of studies have concluded that perceived behavioral control has significant relationship with entrepreneurial intentions (Tkachev & Kolvereid (1999), Lee et al. (2006), and Wu & Wu 2008).

Actual behavioral control such as family cooperation, availability of finances, necessary business skills and time is a non-motivational predictor of entrepreneurial behavior and it is a good predictor of intentions to start one's own business; perceived behavioral control on the other hand has been found to have a positive and significant relationship with entrepreneurial inclination of the individuals (Wu & Wu 2008, Kolvereid 1996, & Souitaris et al. 2007). As Alfons and Cuevas (2012) mention the PBC is a distinguishing characteristics of entrepreneurs. PBC is based in self - efficacy of the individual. A high level of PBC suggests that individual believe that they have greater control over their behavior (Ajzen, 1985, 2002), Rantanen (2013) also explains that PBC is linked to the appraisal of one's capabilities to withstand the obligations associated with accomplishment of desired task.

Koe et al., (2012) mentioned that the most important trigger to make people entrepreneur is their intention to become an entrepreneur. Koe et al. (2012) suggests that entrepreneurial intentions are the result of commitment to start one's own business. This commitment is achieved when a person has complete control over situation or behavior; this behavior is technically called 'Volitional Behavior'. In volitional behavior mere intention is enough to predict the behavior. The need to study perceived behavior control arises when commitment to start one's own business is weak. Ajzen identifies that perceived behavior control become important in situation where volitional control over the behavior is weak (Ajzen, 1991).

Aslam, Awan and Khan (2012) conclude that those individuals who have had earlier previous personal experience (of being an entrepreneur or owner of a business), directly or indirectly are more inclined towards entrepreneurship. Further if an individual had family background and business parents, it also greatly developed positive attitude towards entrepreneurship and such individuals had positive perception about their ability to run a business. Ali, Topping, Tariq and Wakefield (2011) compare entrepreneurial propensity in the primary school teachers of Pakistan and United Kingdom. The researchers study propensity in terms of locus of control, self-efficacy, entrepreneurial intentions, instrumental readiness and subjective norms. The research concluded that teachers in UK had higher entrepreneurial intention as compared to their Pakistani counterparts despite same self-efficacy level. Both the groups had a negative self-concept about the aim of their life though they attributed success to hard work and not luck. Pakistanis were better in dealing with ambiguous situation and problem solving than Scottish teachers. Sumra, Safarish, Suhail and Ahmed (2011) studied public sector universities

and conclude that students have low inclination towards self-employment. According to their findings, the factors responsible for the lack of interest include absence of following factors

- New ideas and imagination
- Ability to work in ambiguity
- Funds
- Help from existing entrepreneurs
- Marketing of entrepreneurship from teachers
- No family experience of owning a business

### **1.1 Research Problem**

Considering the role of entrepreneurship for a nation's economy (Gorman et al., 1997; Brockhaus, 1991; and Sandhu, Sidique & Riaz 2010), the current study aims to study the inclination of the Non-Business graduates, especially Engineers towards entrepreneurship and generally about their career goals. The study focuses on Bachelors of Engineering in electronics from four engineering schools in Karachi. One of the reason for focusing on educational institution is that educational institutions play an important role in economic growth by creating a climate conducive for new business creation. Educational institutions generate new ideas and help entrepreneurs by creating knowledge and developing technology (Yildirim & Askum, 2012).

Fresh graduates after Bachelor of Engineering (BE) start looking for jobs. As entrepreneurship creates jobs for these graduates and for other workers also its contribution towards economy is many fold (Mueller & Thomas, 2000; Jack & Anderson, 1999 & Gürol & Atsan 2006). It reduces unemployment and acts as a catalyst for economic activities. Entrepreneurship as an opportunity for self-employment and employment for others is a possible career choice. It thus makes sense to study how students perceive that they are capable of starting their own business. The study is also significant as Koe (2013) that it is important to understand the bases of entrepreneurial intention to develop entrepreneurial mindset. The study is significant since Pakistan is an underdeveloped country and not many have actual behavioral control such as access to loan, venture capitalists, incubation center and consultancy on starting up a new business. Instead of actual behavioral control, economic problems create a fatal mindset that develops a poor perception of capabilities and self-efficacy (Karraker 2014 & Veselska 2009) . The current research emphasized that practical nature of engineering education (such as working on real machines, technical know-how and knowledge of product development) inculcates a positive perception of behavioral control.

### **1.2 Significance of the Study**

Education creates knowledge and develops ability to learn and perform in the real world. Considering this role of education it is important to study how the engineering students perceive the development of their capabilities and subsequently apply their knowledge in starting their own business as a preferred career choice.

The thematic scope is perceived behavioral control (based on the theory of planned behavior) and its subsequent impact on the entrepreneurial inclination of the students. Geographical scope of this study is on the finalist students of the Engineering Schools in Karachi only.

## **2. Literature Review**

### **2.1 Entrepreneurship and its Role in the Economy**

Entrepreneurship has been described as an engine of economic growth and employment creation. E (Gorman, 1997). Private businesses, government and academicians have conducted studies on the role of entrepreneurs in a society. Earlier, the economists focused on the role of entrepreneurship and entrepreneurs in the economy. Schumpeter and Kirzner studied the role of entrepreneurs in the economy of a country from two opposite perspectives. Schumpeter (1932) focused on the role of entrepreneurs as one who bring creative destruction and pushes the economic engine ahead through its creative force. Kirzner (1973) on the other hand explained entrepreneurs as someone who exploits the existing opportunities that others failed to notice and thus bring stability in the society. Baumol (1990) mentioned that entrepreneurship is innate and both Schumpeterian and Kirznerian type of entrepreneurs exist and help the economy grow. Baumol (2004), mentions that entrepreneurship and market economy contributed to significant rise in income per capita of British and American economy.

Many researchers have used the terms entrepreneurship and self-employment interchangeably. The current study would take the same perspective (Marques, 2012; Athayde, 2009; and Kolvereid, 1996). However, a clear understanding of the main term entrepreneurship is important for a better understanding of the topic. Hindle and Rushworth (2000) define entrepreneurship as an activity based on an innovative opportunity that leads to the establishment of a new business entity. Nixon (2004) as cited by Carey and Naudin (2006) provides another perspective and suggests that entrepreneurship is the search of opportunities and belief to translate the idea into concrete reality. Today, both small and large businesses benefit from this energy of entrepreneurship and especially small businesses contribute greatly to employment and social and political stability of countries by being agile and innovative. (Thurik & Wennekers, 2004).

### **2.2 Factors of Entrepreneurial Inclination in Engineering Students**

Entrepreneurship has been a major area of interest for economists. Earlier explanations of entrepreneurship and models to study entrepreneurship were economic in nature. Baumol (1990) mentioned that reward structure in the economy is the major motivating factor. Campbell (1992) provided a comparison of business ownership and salary as a paid employee. Praag and Cramer (2001) built their study on Campbell (1992) model and concluded that entrepreneurship will be accepted if the expected income from own business were greater than the paid employment. Levesque (2002) also took an economist's perspective in studying entrepreneurship. Rees and Shah (1986) also added another dimensions in studying entrepreneurship, i.e. risk taking. They studied that risk takers start their own business and risk averse are more likely to start working as a paid employee.

Other explanations such as Pull and Push theory of entrepreneurship (Gilad & Levine, 1986) and subsequent studies (Keeble, 1992; Orhan & Scott, 2001) also concluded that people with risk taking nature are more likely to become entrepreneurs. Introduction of risk in the study of entrepreneurship attracted psychologists to study the personality of entrepreneurs. Bird (1988) suggested that a behavioral model of entrepreneurship be developed to study it. Risk taking depends upon individual's perception of their personality. The theories that have been

used to study entrepreneurial inclination based on the perception of the individuals, the theory of planned behavior given by Ajzen (1985) has been the most influential. The theory of planned behavior has three dimensions, namely attitude, perceived behavioral control and subjective norms. Wu and Wu 2008, Kolvereid 1992 and Krueger, 2000 argue that presence of other factors is important but perceived behavioral control is the strongest predictor of one's inclination to start one's own business.

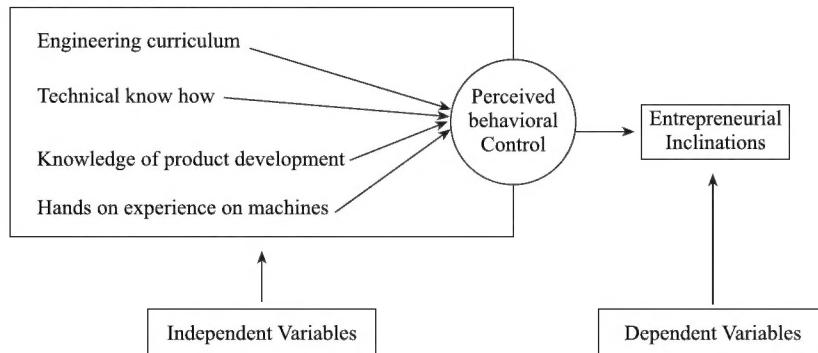
Wu and Wu (2008), studied the inclination of engineering and other major students in China towards entrepreneurship. The findings revealed that a positive attitude with positive perceived behavioral control is a strong and significant indicator of behavioral inclination. A major finding was the strong inclination of Engineering students towards entrepreneurship. These students scored the highest on both attitude and perceived behavioral control. As the researcher put it "Engineering students have the highest tendency to start-up". The results also showed that undergraduate and diploma students were more motivated than postgraduate students. Marques et al. (2012) found a positive and significant relationship of PBC and entrepreneurial intention in secondary school students of Portugal. The study also found a positive and significant relationship between attitude and PBC. Joensuu et al. (2013) research on the development of the intentions to become an entrepreneur suggests that intentions decrease during the studies of the students. This suggests that student's self-perception or PBC changes overtime. The educational system must take care of this phenomenon of change.

### **3. Conceptual Framework**

The conceptual frame proposes that perceived behavioral control can be measured using the two constructs namely, perceived in starting one's own business (Self-efficacy) and perceived control over the difficulty, i.e. Controllability (Ajzen 2002). Joensuu et al. (2013) also considered the same framework and also studied the impact of EI on gender. Their study also focused on the changes of EI overtime as a result of change in the components of EI as mentioned earlier.

The current study's conceptual model is based on PBC component of Ajzen (2012) theory of planned behavior. Ferramnte and Sabitini (2007) argue that since education transfers knowledge and develops skill, it changes people's perception about themselves. What students study and the technical knowhow (developed as a result of their education at the university) gives them the skills to overcome the difficulties in starting their own business. (Ewert & Baker, 2001). Ferreira et al. (2012) also highlight the point that education system should work to change the attitude towards EI to bring a change in PBC. Thus curriculum and technical know-how are used to define controllability in the framework. Richardson (1993) studied different academic majors and the perceived contribution of education to different academic majors. He concluded that engineering major because of practical nature of product development and hands on experience on machines in engineering major develop greater self-efficacy. Thus knowledge of product development and working on machines defines self-efficacy in the theoretical framework as given below.

Figure 1. Conceptual Framework



### 3.1 Hypotheses

The following hypotheses have been formulated on the basis of variables identified:

- H<sub>1</sub>: Students who studied engineering curriculum tendency to become entrepreneurs.
- H<sub>2</sub>: Student with technical know-how are more likely to start their own business.
- H<sub>3</sub>: Students with product development knowledge are more likely to start their own business.
- H<sub>4</sub>: Students with hands on experience on machines have a tendency to become entrepreneurs.
- H<sub>5</sub>: Students with perceived behavioral control are likely to become entrepreneurs.

### 4. Research Methodology

The study follows an interpretive approach. The interpretive approach explores the relationship between dependent and independent variables. This approach is useful since the research aims to test hypothesis mentioning the relationship between independent and dependent variables.

This is a quantitative study and measure students' perception about their capability and inclination to start their own business. Perceived behavioral control is the independent variable as the research analyses PBC's impact on entrepreneurial intention, the dependent variable. This study takes a naturalist perspective, particularly that of an interpretive constructionist since the researcher aims to study the perception of students about their behavior.

#### 4.1 Sample

The study focuses on B.E final year students. There are around 12 universities recognized by Pakistan Engineering Council that are offering engineering education in Karachi. A total of four universities have been selected using convenience sampling. The total number of students in the last semester of B.E is 3500. The number is based on information from the departments. The total number of student studying specialization in electronics is 550 (The number of student is based on information from the department. This data is publicly not

available). A sample of 226 was calculated on the basis of 5% confidence interval and 95% confidence level (Johnson, R. and Kuby, P., 2008). Random sampling technique was used to select the sample. Random sampling method involves selecting the sample from the sampling frame using random numbers from random number tables, SPSS, excel or random number generators such as Research Randomizer (Saunders, Lewis & Thornhill, 2009). Students' registration record has been used as population frame. Random numbers were generated using SPSS and the students were randomly selected from the record.

#### **4.2 Instrument**

The research instrument was developed using the findings of the earlier researches and Ajzen (2002) guidelines on developing a questionnaire to measure Perceived behavioral control. Koe et al's (2012) concept paper also helped in understanding the relevant measures of PBC. Karlsson and Moberg (2013) paper also mentions measures of PBC. Kadir et al (2012) have discussed the questionnaire development procedure in detail to measure elements of theory of planned behavior. The guidelines and earlier findings have been used to develop the questionnaire. The reliability was tested in the pilot study of the research and on the complete data as well. This has also helped in making any necessary modification in the questionnaire. The questionnaire has two main sections. It started with questions on demographic profile and then likert scale rating questions. The constructs were calculated on responses on different questions. Constructs and their explanation are further provided in the theoretical framework section. The statistical software SPSS 20 has been used to run statistical tests. Correlation analysis was used to study the relationship between perceived behavioral control and entrepreneurial inclination. Correlation coefficient and p-value were used.

Following are the limitations of the study:

- The study focuses on B.E final year students majoring in electronics. The findings of this research may not be generalizable to the entire disciplines of B.E.
- The final year students are highly ambitious to join the real world. This ambition may influence the perception of the students.

#### **5. Data Presentation and Analysis**

Data was collected from four engineering universities. The university included both state owned and privately owned universities. The only department common in all these universities is the electronics department. Therefore, the electronics department's students were surveyed using a structured questionnaire. The questionnaire was based on the findings from the earlier researches. The data was analyzed using SPSS 20.

A total of 248 students from four engineering universities were surveyed. The students were contacted in the classrooms. The students were studying the specialization of electronics and were in the last semester of their Bachelors of engineering. The analysis is given below. Firstly, the reliability was tested, followed by hypothesis testing.

Cronbach's Alpha test was run to find the reliability of the data. A total of 19 questions were tested. These questions did not include the questions on the demographic data. The Cronbach's Alpha is 0.775 which is greater than 0.7. This suggests that the data is reliable.

Reliability Statistics	
Cronbach's Alpha	N of Items
.775	19

**Table 1**  
Correlation among entrepreneurial inclination and key variables

	Inclination Stoward Wardsentrepre neurship	Engineering Curriculum	Technical Know How	Knowledge of Product Development	Handson Experience on Machines	Perceived Behavioral Control
Inclinationsto Wardsentrepre neurship	1 0.042 0.508 274	0.042 0.093 246	0.103 0.188 264	0.083 0.188 256	0.056 0.354 271	0.099 0.139 226
Engineeringcurriculum	0.042 0.508 246	1 0 254	.424** 0 247	.424** 0 241	.195** 0.002 251	.698** 0 233
Technicallknowhow	0.103 0.093 264	.424** 0 247	1 0 273	.416** 0 258	.228** 0 270	.715** 0 233
Knowledgeof productdevelopment	0.083 0.188 256	.424** 0 241	.416** 0 258	1 0 265	.452** 0 262	.808** 0 233
Handsonexperie Nceonmachines	0.056 0.354 271	.195** 0.002 251	.228** 0 270	.452** 0 262	1 0 279	.670** 0 233
Perceivedbehavi oralcontrol	0.099 0.139 226	.698** 0 233	.715** 0 233	.808** 0 233	.670** 0 233	1 0 233

\*\* Correlation Is Significant At The 0.01 Level (2-Tailed).

The correlation Table 1 explains that all the independent variables are significantly related. This suggests the engineering education inculcates technical knowledge, technical know-how and hands on experience of working on machines, as all the correlations are significant.

The table also mentions that these factors are also significantly contributing towards perceived behavioral control. It shows that the engineering curriculum and other variables are contributing towards developing perceived capabilities of the students and they believe in themselves being good engineers based on the above-mentioned factors. A descriptive analysis of the individual items of the entrepreneurial inclination suggests strong inclination. Despite this fact the relationship between perceived behavioral control and entrepreneurial inclination was found to be insignificant. This suggests that there are other variables that explain this behavior.

## 5.1 Hypotheses Testing

**Hypothesis 1:** Students who studied engineering curriculum have tendency to start their own business.

The correlation analysis shows a positive, weak and insignificant relationship between engineering curriculum and students' inclination to start their own business. The Correlation coefficient value (as mentioned in Table 2) between inclination and curriculum is 0.042. The value suggests that the association between engineering curriculum and entrepreneurial inclination is weak and insignificant. Thus the hypothesis that studying engineering develops entrepreneurial inclination is not accepted.

**Hypothesis 2:** Students, with technical know-how, are more likely to start their own business. Correlation analysis shows that students' technical know-how has weak and insignificant association with their inclinations to start a business. Correlation coefficient value (as mentioned in Table 2) is 0.103. Thus the hypothesis that technical know-how is related to entrepreneurial inclination is not accepted.

**Hypothesis 3:** Students with product development knowledge are more likely to start their own business.

Correlation analysis shows that product development knowledge and the inclination to start a business have weak and insignificant association. Correlation coefficient value (as mentioned in Table 2) is 0.083. Thus the hypothesis that practical knowledge of product development develops entrepreneurial inclination is not accepted.

**Hypothesis 4:** Students with hands on experience on machines have a tendency to become entrepreneurs.

Correlation analysis shows that product development knowledge and the inclination to start a business have weak and insignificant association. Correlation coefficient value (as mentioned in Table 2) is 0.083. Thus the hypothesis that practical knowledge of product development develops entrepreneurial inclination is not accepted.

**Hypothesis 5:** Students with perceived behavioral control are likely to become entrepreneurs. Correlation analysis suggests that perceived behavioral control and inclination to start a business have weak and insignificant association. Correlation coefficient value (as mentioned in the Table 2) is 0.099. Thus the hypothesis that students who have perceived behavioral control are likely to become entrepreneur is not accepted.

**Table 2**  
Correlational Analysis and Hypothesis Testing

H1: Students who studied engineering curriculum have tendency to start their own business						
	Inclination	Engineering Curriculum	Pearson Correlation	p-value	Decision	Conclusion
N	274	246	0.042	0.508	Reject Hypothesis	There is insufficient evidence to reject that there is no association between the entrepreneurial intentions and Engineering Curriculum. Engineering education does not bring any change in the intentions of students to become an entrepreneur.
Mean	4.0137	2.8102				
Std. Deviation	0.72882	0.83674				
H2: Students with technical know-how are more likely to start their own business						
	Inclination	Technical Know-how	Pearson Correlation	p-value	Decision	Conclusion
N	274	264	0.103	0.093	Reject Hypothesis	There is insufficient evidence to reject that there is no association between the entrepreneurial intentions and technical know-how. Technical know-how does not develop entrepreneurial inclination.
Mean	4.0137	2.9695				
Std. Deviation	0.72882	0.90223				
H3: Students with product development knowledge are more likely to start their own business.						
	Inclination	Product development knowledge	Pearson Correlation	p-value	Decision	Conclusion
N	274	256	0.083	0.188	Reject Hypothesis	There is insufficient evidence to reject that there is no association between the entrepreneurial intentions and product development knowledge. Practical knowledge of product development does not develop entrepreneurial inclination.
Mean	4.0137	3.2396				
Std. Deviation	0.72882	0.85343				
H4: Students with hands on experience on machines have a tendency to become entrepreneurs						
	Inclination	Hands experience machines	Pearson Correlation	p-value	Decision	Conclusion
N	274	271	0.083	0.188	Reject Hypothesis	There is insufficient evidence to reject that there is no association between the entrepreneurial intentions and hands-on experience of working on machines.
Mean	4.0137	3.0024				
Std. Deviation	0.72882	0.9972				Learning from hand-on-experience on machines does not contribute towards entrepreneurial inclination.
H5: Students with perceived behavioral control are likely to become entrepreneurs						
	Inclination	Hands experience machines	Pearson Correlation	p-value	Decision	Conclusion
N	274	274	0.099	0.139		
Mean	4.0137	2.9999				
Std. Deviation	0.72882	0.65042				

## 6. Research Findings and Results

The correlational analysis in the last section has shown that the relationship between perceived behavioral control and entrepreneurial inclination is weak and insignificant. A model was developed using regression analysis to predict entrepreneurial inclination based on the perceived behavioral control. Regression analysis confirms our previous analysis, as the model only explains 10% of the dependent variable. This suggests that variables other than perceived behavioral control needs to be studied to find out the determinants of entrepreneurial inclinations.

The research study found out that engineers have high inclinations towards entrepreneurship. A discussion with the respondents even revealed that a group of students has already started a business. However, current engineering education curriculum and even the practical nature of their education is not a contributing factor in their positive self-concept and efficacy.

## 7. Discussion

This study assesses the impact of perceived behavioral control in engineering students as a result of their curriculum and practical nature of their discipline. The study found out the despite the fact that students have high level of entrepreneurial inclination, perceived behavioral control in general does not contribute towards entrepreneurial inclination.

Earlier, research studies on entrepreneurial inclination in engineering students found strong inclinations for entrepreneurship (McKeown et al. 2006 , Berglund & Wennberg 2006) . Engineering students also scored highest on the perceived behavioral control when compared against students of other majors (Wu & Wu, 2008). Richardson (1993) argued that because of the practical nature of the engineering education, engineers have high-perceived behavioral control. The contribution of the practical nature of the engineering education has been studies in earlier researches such as Chau (2005). He discusses that the final project in engineering education greatly influences the graduate and also determines the quality of an engineering program. In the current study, it is found that working on projects also has no significant relationship with the inclination to become entrepreneur.

Kailer (2007), indicated that satisfaction with university teaching and assessment is insufficient for evaluating entrepreneurial skills and abilities. The research agrees with Kailer (2997) findings and suggests that generally engineering curriculum and other variables do not contribute to entrepreneurial inclination. However, it may be a hasty generalization to make. When the data was split on the basis of universities and the data was analyzed, the findings seemed different. As discussed earlier, a total of four universities were studied. In the first university, hands on experience and perceived behavioral control have significant relationship with entrepreneurial inclination. In the second university, which is the largest engineering university in Karachi, however, the findings suggest that no factor has significant relationship with entrepreneurial inclination. In the third university, engineering curriculum and perceived behavioral control have significant relationship with entrepreneurial inclinations. In the fourth university technical know-how, product development and perceived behavioral control have significant relationship with entrepreneurial inclination. The findings may indicate that different universities are at different levels of shaping student's entrepreneurial intentions. The comparison suggests that universities need to focus on different dimensions of their curriculum and teaching methodology to inculcate entrepreneurial capabilities in their graduates. As Karlsson and Moberg (2013) concluded that entrepreneurship education encouragingly impact attitudes toward new business venture, the Entrepreneurial self-efficacy and the actual behaviors of setting up new business. Kader et al (2012) also illustrated that entrepreneurship education with proper teaching methodology helps in better self-image of students and results in practical learning. In a combined paper on "entrepreneurship in engineering education" presented in ASEE/IEEE frontiers in Education conference in 2005, authors emphasized on developing an entrepreneurial development center in engineering universities and including flexible courses that can be adjusted to different engineering technologies. It must also be emphasized as Gorman et al., (1997) also mentioned that a

simplistic approach of assuming a causal relationship between entrepreneurial education and entrepreneurial inclination is not sufficient since the choice of self-employment is not necessarily the result of formal education. Other factors such as family business, choice of occupation in the family history, peer influence also influence the individuals seeking to start their own business.

## **8. Conclusion**

The study concludes that generally there is no significant relationship between engineer's perceived behavioral control and entrepreneurial inclinations. However, as the data was analyzed university-wise, it was learnt that different aspects of perceived behavioral control contributed differently to entrepreneurial inclinations. Therefore, it should not be generalized that engineering education has no association with entrepreneurial inclination. The education has strong association with perceived behavioral control but there may be other factors such as the attitude of the engineers towards their own business, job opportunities at home and abroad, university industrial linkages and the subjective norms of the society and families these students belong.

### **8.1 Recommendations**

The research provides the following recommendations:

1. Policy-making institutions and government should focus on engineering education to help engineers start their own businesses.
2. Engineering universities should establish entrepreneurial development centers with linkages as McKeown (2006) identified that despite problems, university partnership with corporate world enhances provision for entrepreneurship due to expert advice of the entrepreneurs in the business corporations.

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